

NHDOT Geotechnical Engineering And Geological Requirements

A. Geotechnical Investigation and Data Analysis

The Design-Builder shall be familiar with available geotechnical information as well as geologic, seismic, hydrogeology and soils literature for the project site. The Design-Builder shall be familiar with the existing site conditions, both native and man-made, shall interpret the existing geotechnical information pertaining to the project site, and shall perform (or request from the NHDOT) additional subsurface investigations as needed, and conduct field and laboratory testing as may be necessary to satisfy itself as to the nature of the soil, rock, and groundwater conditions across the project site. The assessment of the site shall include all variations in groundwater and subsurface conditions, geological formations within the site, attributes of the project site, the nature of the work to be performed, appropriate methods of construction, critical combinations of loading, seismic setting of the site, and any other factors relevant to the proposed project work.

B. Geotechnical Engineering Report Requirements

The Design-Builder shall prepare a final geotechnical engineering report for the entire project, completing it to the general outline provided in Appendix A. The outline is a guide only, and the geotechnical engineer shall include sections in the geotechnical report as necessary to address all aspects of the proposed project designs. The geotechnical report shall summarize information used in the geotechnical engineering analysis and shall provide design and construction recommendations to address geotechnical features within the project including roadway, bridge and other structures. The design and construction recommendations shall be consistent with all applicable NHDOT and AASHTO standards including seismic requirements. The report will be subject to review by the NHDOT for acceptance prior to the report's finalization.

The geotechnical report shall be prepared by an engineer trained and/or experienced in the practice of geotechnical engineering. The geotechnical engineer or a senior geotechnical engineer with review responsibility of the geotechnical report shall have experience on at least five roadway projects and five bridge projects completed for state transportation agencies. The geotechnical report shall be signed and sealed by a Professional Engineer licensed in the State of New Hampshire per 106.12.2.5 in Division 100 of the Standard Specifications. The qualifications of the geotechnical engineer shall be submitted for approval, and the NHDOT reserves the right to deny approval if the qualifications are considered inadequate.

The Design-Builder will be required to follow the NHDOT Standard Specifications and to comply with existing NHDOT Special Provisions for roadway, bridge and other work expected within the project.

APPENDIX A

Geotechnical Engineering Report Outline

Geotechnical Engineering Report Outline

- 1.0 Subsurface Explorations and Laboratory Testing Used in Completing Geotechnical Report
- 2.0 Proposed Project Work Description
- 3.0 Subsurface Conditions at Proposed Improvements
- 4.0 Geotechnical Engineering Recommendations
 - 4.1 Roadways
 - 4.1.1 Structural Section Extra Sand Depth for Frost Protection
 - 4.1.2 Longitudinal and Transverse Underdrain Requirements
 - 4.1.3 Organic Soil Deposit (Muck) Treatments
 - 4.1.4 Embankment Construction and Slope Requirements
 - 4.1.5 Soil Excavation and Soil Slope Requirements
 - 4.1.6 Bedrock Excavation and Rock Slope Requirements
 - 4.2 Structures
 - 4.2.1 Bridge
 - 4.2.1.1 Subsurface Conditions at Substructure Locations
 - 4.2.1.2 Support Material Properties
 - 4.2.1.3 Foundation Type and Frost Embedment Depth
 - 4.2.1.4 Foundation Engineering Properties and Capacities
 - 4.2.1.5 Engineering Analyses of Foundations
 - 4.2.1.6 Structure Backfill Requirements
 - 4.2.1.7 Foundation Testing and Special Requirements
 - 4.2.2 Retaining Walls
 - 4.2.2.1 Subsurface Conditions at Wall Locations
 - 4.2.2.2 Support Material Properties
 - 4.2.2.3 Wall Type and Frost Embedment Depth
 - 4.2.2.4 Foundation Engineering Properties and Capacities
 - 4.2.2.5 Engineering Analysis of Foundation
 - 4.2.2.6 Wall Backfill Requirements
 - 4.2.2.7 Wall Foundation Testing and Special Requirements
 - 4.2.3 Other Minor Structures
 - 4.2.3.1 Traffic Signal Foundations
 - 4.2.3.2 Overhead Sign Foundations
 - 4.2.3.3 Stormwater Treatment Basins
 - 4.2.4 Seismic Assessment and Requirements
 - 4.3 Construction Requirements
 - 4.3.1 Dewatering
 - 4.3.2 Vibration Monitoring
 - 4.3.3 Sequencing for Geotechnical Features
- 5.0 Subsurface Exploration Plan
- 6.0 Tables and Figures
- 7.0 Exploration Logs and Laboratory Test Results